

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

- 1 Claim 1 (currently amended): A method for removing a metallic layer formed from at least one metal from ~~the~~ a surface of a ceramic substrate, said method comprising the step of immersing the ceramic substrate coated with the metallic layer in an acid solution of up to ~~about~~ 31% hydrochloric acid by volume for a time to substantially remove the metallic layer therefrom.
- 1 Claim 2 (original): The method of Claim 1, wherein the acid solution comprises hydrochloric acid at a concentration of about 31 % by volume of the solution.
- 1 Claim 3 (original): The method of Claim 1, wherein the metallic layer further comprises a composite layer formed from an aluminum coating in contact with the ceramic substrate and a tantalum deposition overlaying the aluminum coating.
- 1 Claim 4 (original): The method of Claim 2, further comprising subsequent to said immersing step, the step of annealing the ceramic substrate at a predetermined temperature sufficient to at least reduce pre-existing damage in the surface of the ceramic substrate.

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- 1 Claim 5 (original): The method of Claim 3, further comprising subsequent to said
2 immersing step, the step of annealing the ceramic substrate at an elevated
3 temperature sufficient to at least reduce pre-existing damage in the surface of the
4 ceramic substrate via annealing.

- 1 Claim 6 (original): The method of Claim 4, wherein the annealing step further
2 comprises ramping the temperature using at least one predetermined heating ramp
3 rate.

- 1 Claim 7 (original): The method of Claim 5, wherein the annealing step further
2 comprises ramping the temperature using at least one predetermined heating ramp
3 rate.

- 1 Claim 8 (original): The method of Claim 1, further including subsequent to the
2 immersing step, the step of immersing said substrate in an acid bath containing a
3 solution of nitric acid (HNO_3) and hydrofluoric (HF) acid to remove stains.

- 1 Claim 9 (original): The method of Claim 8, wherein the acid bath contains equal parts
2 of water, nitric acid, and hydrofluoric acid.

- 1 Claim 10 (original): The method of Claim 2, further including subsequent to the
2 immersing step, the step of immersing said substrate in an acid bath containing a
3 solution of nitric acid (HNO_3) and hydrofluoric (HF) acid to remove stains.

1 Claim 11 (original): The method of Claim 10, wherein the HNO₃/HF acid bath
2 contains equal parts of water, nitric acid, and hydrofluoric acid.

1 Claim 12 (original): The method of Claim 6, wherein the ramping step further
2 comprises:

3 heating to a first temperature of about 302°F at a first heating ramp rate of
4 about 122°F/hour;

5 maintaining the first temperature for about an hour;

6 heating to a second temperature of about 752°F at a second heating ramp rate
7 of about 212°F/hour;

8 heating to a third temperature of about 1652°F at a third heating ramp rate of
9 about 347°F/hour;

10 maintaining the third temperature for about 7 hours; and

11 allowing to cool to a fourth temperature of about 100°F at a cooling ramp rate
12 of about minus 210°F/hour.

1 Claim 13 (original): The method of Claim 6, wherein the ramping step further
2 comprises:

3 heating to a first temperature of about 302°F at a first heating ramp rate of
4 about 122°F/hour; and

5 maintaining the first temperature for about an hour.

1 Claim 14 (original): The method of Claim 13, wherein the ramping step further
2 comprises:

3 heating to a second temperature of about 752°F at a second heating ramp rate
4 of about 212°F/hour.

1 Claim 15 (original): The method of Claim 14, wherein the ramping step further
2 comprises:

3 heating to a third temperature of about 1652°F at a third heating ramp rate of
4 about 347°F/hour; and

5 maintaining the temperature for about 7 hours.

1 Claim 16 (original): The method of Claim 15, wherein the ramping step further
2 comprises:

3 allowing to cool to a fourth temperature of about 100°F at a cooling ramp rate
4 of about minus 210°F/hour.

1 Claim 17 (original): The method of Claim 7, wherein the ramping step further
2 comprises:

3 heating to a first temperature of from about 302°F at a first heating ramp rate
4 of about 122°F/hour;

5 maintaining the first temperature for about an hour;

6 heating to a second temperature of about 752°F at a second heating ramp rate
7 of about 212°F/hour;

8 heating to a third temperature of about 1652°F at a third heating ramp rate of
9 about 347°F/hour;
10 maintaining the third temperature for about 7 hours; and
11 allowing to cool to a fourth temperature of about 100°F at a cooling ramp rate
12 of about minus 210°F/hour.

1 Claim 18 (original): The method of Claim 7, wherein the ramping step further
2 comprises:

3 heating to a first temperature of about 302°F at a first heating ramp rate of
4 about 122°F/hour; and
5 maintaining the first temperature for about an hour.

1 Claim 19 (original): The method of Claim 18, wherein the ramping step further
2 comprises:

3 heating to a second temperature of about 752°F at a second heating ramp rate
4 of about 212°F/hour.

1 Claim 20 (original): The method of Claim 19, wherein the ramping step further
2 comprises:

3 heating to a third temperature of about 1652°F at a third heating ramp rate of
4 about 347°F/hour; and
5 maintaining the temperature for about 7 hours.

1 Claim 21 (original): The method of Claim 20, wherein the ramping step farther
2 comprises:
3 allowing to cool to a fourth temperature of about 100°F at a cooling ramp rate
4 of about minus 210°F/hour.

1 Claim 22 (original): The method of Claim 2, wherein the temperature of the HCl acid
2 solution is maintained at ambient.

1 Claim 23 (original): The method of Claim 22, wherein the ceramic substrate is
2 immersed in the HCl acid solution for about 15 minutes to an hour.

1 Claim 24 (currently amended): A method for removing a metallic layer formed from at
2 least one metal from ~~the~~ a surface of a ceramic substrate, said method comprising
3 the steps of:
4 immersing the ceramic substrate coated with the metallic layer formed from
5 one metal in an acid solution of up to 31% hydrochloric acid (HCl) by volume for a
6 time to remove at least a portion of the metallic layer therefrom; and
7 annealing the ceramic substrate subsequent to said immersion step at an
8 elevated temperature sufficient to at least reduce pre-existing damage in the surface
9 of the substrate.

1 Claim 25 (original): The method of Claim 24, wherein the acid solution comprises
2 hydrochloric acid at a concentration of up to 31 % by volume of the solution.

- 1 Claim 26 (original): The method of Claim 24, wherein the acid solution comprises
- 2 hydrochloric acid at a concentration of about 31 % by volume of the solution.

- 1 Claim 27 (original): The method of Claim 24, wherein the metallic layer further
- 2 comprises a composite layer formed from an aluminum coating in contact with the
- 3 ceramic substrate and a tantalum deposition overlaying the aluminum coating.

- 1 Claim 28 (original): The method of Claim 24, wherein the annealing step further
- 2 comprises ramping the temperature using at least one predetermined heating ramp
- 3 rate.

- 1 Claim 29 (original): The method of Claim 28, wherein the ramping step further
- 2 comprises:
 - 3 heating to a first temperature of about 302°F at a first heating ramp rate of
 - 4 about 122°F/hour;
 - 5 maintaining the first temperature for about an hour;
 - 6 heating to a second temperature of about 752°F at a second heating ramp rate
 - 7 of about 212°F/hour;
 - 8 heating to a third temperature of about 1652°F at a third heating ramp rate of
 - 9 about 347°F/hour;
 - 10 maintaining the third temperature for about 7 hours; and
 - 11 allowing to cool to a fourth temperature of about 100°F at a cooling ramp rate
 - 12 of about minus 210°F/hour.

- 1 Claim 30 (original): The method of Claim 28, wherein the ramping step further
- 2 comprises:
 - 3 heating to a first temperature of about 302°F at a first heating ramp rate of
 - 4 about 122°F/hour; and
 - 5 maintaining the first temperature for about an hour.
- 1 Claim 31 (original): The method of Claim 30, wherein the ramping step further
- 2 comprises:
 - 3 heating to a second temperature of about 752°F at a second heating ramp rate
 - 4 of about 212°F/hour.
- 1 Claim 32 (original): The method of Claim 31, wherein the ramping step further
- 2 comprises:
 - 3 heating to a third temperature of about 1652°F at a third heating ramp rate of
 - 4 about 347°F/hour; and
 - 5 maintaining the third temperature for about 7 hours.
- 1 Claim 33 (original): The method of Claim 32, wherein the ramping step further
- 2 comprises:
 - 3 allowing to cool to a fourth temperature of about 100°F at a cooling ramp rate
 - 4 of about minus 210°F/hour.
- 1 Claim 34 (original): The method of Claim 26, wherein the temperature of the HCl acid
- 2 solution is maintained at ambient.

- 1 Claim 35 (original): The method of Claim 34, wherein the ceramic substrate is
- 2 immersed in the HCl acid solution for about 15 minutes to an hour.

- 1 Claim 36 (original): The method of Claim 25, wherein the heat treating step further
- 2 comprises ramping the temperature using at least one predetermined heating ramp
- 3 rate.

- 1 Claim 37 (original): The method of Claim 36, wherein the ramping step further
- 2 comprises:
 - 3 heating to a first temperature of from about 302°F at a first heating ramp rate
 - 4 of about 122°F/hour;
 - 5 maintaining the first temperature for about an hour;
 - 6 heating to a second temperature of about 752°F at a second heating ramp rate
 - 7 of about 212°F/hour;
 - 8 heating to a third temperature of about 1652°F at a third heating ramp rate of
 - 9 about 347°F/hour;
 - 10 maintaining the third temperature for about 7 hours; and
 - 11 allowing to cool to a fourth temperature of about 100°F at a cooling ramp rate
 - 12 of about minus 210°F/hour.

- 1 Claim 38 (original): The method of Claim 36, wherein the ramping step further
- 2 comprises:
 - 3 heating to a first temperature of about 302°F at a first heating ramp rate of
 - 4 about 122°F/hour; and

5 maintaining the temperature for about an hour.

1 Claim 39 (original): The method of Claim 38, wherein the ramping step further
2 comprises:

3 heating to a second temperature of about 752°F at a second heating ramp rate
4 of about 212°F/hour.

1 Claim 40 (original): The method of Claim 39, wherein the ramping step further
2 comprises:

3 heating to a third temperature of about 1652°F at a third heating ramp rate of
4 about 347°F/hour; and

5 maintaining the temperature for about 7 hours.

1 Claim 41 (original): The method of Claim 40, wherein the ramping step further
2 comprises:

3 allowing to cool to a fourth temperature of about 100°F at a cooling ramp rate
4 of about minus 210°F/hour.

1 Claim 42 (currently amended) A method for refurbishing a deposition ring comprising
2 a ceramic substrate coated with a metallic composite layer having an aluminum layer
3 in contact with the a surface of the ceramic substrate and a tantalum layer in
4 deposited over the aluminum layer, said method comprising the steps of:

5 immersing the ceramic substrate coated with the metallic composite layer in a
6 solution of up to 31% hydrochloric acid (HCl) by volume, for a time to remove at least
7 a portion of the metallic layer therefrom;
8 removing the ceramic substrate from the acid solution;
9 rinsing the ceramic substrate in a rinse solution;
10 drying the substrate; and
11 coating the ceramic substrate with a new metallic layer.

1 Claim 43 (original): The method of Claim 42, further comprising, before said coating
2 step, the step of annealing the ceramic substrate at a predetermined temperature for
3 a sufficient time to at least reduce damage or defects in the surface of the ceramic
4 substrate.

1 Claim 44 (original): The method of Claim 42, further comprising after said rinsing
2 step, the step of immersing said substrate in an acid bath solution of HNO₃ and HF to
3 remove stains, whereafter another step of rinsing is made.

1 Claim 45 (original): The method of Claim 44, wherein the acid bath solution contains
2 equal parts of H₂O, HNO₃ and HF.

1 Claim 46 (original): The method of Claim 44, further comprising before said coating
2 step, the step of drying said substrate at a predetermined temperature for a
3 predetermined time.

1 Claim 47 (original): The method of Claim 46, wherein said predetermined
2 temperature is 250°F, and said predetermined time is about an hour.

1 Claim 48 (original): The method of Claim 43, wherein the annealing step further
2 comprises ramping the temperature using at least one predetermined heating ramp
3 rate.

1 Claim 49 (original): The method of Claim 48, wherein the ramping step further
2 comprises:
3 heating to a first temperature of from about 302°F at a first heating ramp rate
4 of about 122°F/hour;
5 maintaining the first temperature for about an hour;
6 heating to a second temperature of about 752°F at a second heating ramp rate
7 of about 212°F/hour;
8 heating to a third temperature of about 1652°F at a third heating ramp rate of
9 about 347°F/hour;
10 maintaining the third temperature for about 7 hours; and
11 allowing to cool to a fourth temperature of about 100°F at a cooling ramp rate
12 of about minus 210°F/hour.

1 Claim 50 (original): The method of Claim 48, wherein the ramping step further
2 comprises:
3 heating to a first temperature of about 302°F at a first heating ramp rate of
4 about 122°F/hour; and

5 maintaining the first temperature for about an hour.

1 Claim 51 (original): The method of Claim 50, wherein the ramping step further
2 comprises:

3 heating to a second temperature of about 752°F at a second heating ramp rate
4 of about 212°F/hour.

1 Claim 52 (original): The method of Claim 51, wherein the ramping step further
2 comprises:

3 heating to a third temperature of about 1652°F at a third heating ramp rate of
4 about 347°F/hour; and

5 maintaining the third temperature for about 7 hours.

1 Claim 53 (original): The method of Claim 52, wherein the ramping step further
2 comprises:

3 allowing to cool to a fourth temperature of about 100°F at a cooling ramp rate
4 of about minus 210°F/hour.

1 Claim 54 (original): The method of Claim 42, wherein the acid solution is about 31 %
2 HCl.

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1 Claim 55 (currently amended): A method for refurbishing a deposition ring
2 comprising a ceramic substrate coated with a metallic composite layer having an
3 aluminum layer in contact with ~~the~~ a surface of the ceramic substrate and a tantalum
4 layer deposited over the aluminum layer, said method comprising the steps of:
5 immersing the ceramic substrate coated with the metallic composite layer in an
6 acid solution of up to 31% hydrochloric acid (HCl) by volume, for a sufficient time to
7 substantially remove the metallic layer therefrom;
8 removing the ceramic substrate from the acid solution;
9 rinsing the ceramic substrate in a rinse solution;
10 drying the substrate;
11 annealing the ceramic substrate at a predetermined temperature for a
12 sufficient time to at least reduce damage or defects in the surface of the ceramic
13 substrate; and
14 coating the ceramic substrate with a new metallic layer.

1 Claim 56 (original): The method of Claim 55, wherein the acid solution includes about
2 31% hydrochloric acid.

1 Claim 57 (original): The method of Claim 56, wherein the annealing step further
2 comprises ramping the temperature using at least one predetermined heating ramp
3 rate.

1 Claim 58 (original): The method of Claim 57, wherein the ramping step further
2 comprises:

3 heating to a first temperature of from about 302°F at a first heating ramp rate
4 of about 122°F/hour;

5 maintaining the first temperature for about an hour;

6 heating to a second temperature of about 752°F at a second heating ramp rate
7 of about 212°F/hour;

8 heating to a third temperature of about 1652°F at a third heating ramp rate of
9 about 347°F/hour;

10 maintaining the third temperature for about 7 hours; and

11 allowing to cool to a fourth temperature of about 100°F at a cooling ramp rate
12 of about minus 210°F/hour.

1 Claim 59 (original): The method of Claim 57, wherein the ramping step further
2 comprises:

3 heating to a first temperature of about 302°F at a first heating ramp rate of
4 about 122°F/hour; and

5 maintaining the first temperature for about an hour.

1 Claim 60 (original): The method of Claim 59, wherein the ramping step further
2 comprises:

3 heating to a second temperature of about 752°F at a second heating ramp rate
4 of about 212°F/hour.

- 1 Claim 61 (original): The method of Claim 60, wherein the ramping step further
- 2 comprises:
 - 3 heating to a third temperature of about 1652°F at a third heating ramp rate of
 - 4 about 347°F/hour; and
 - 5 maintaining the third temperature for about 7 hours.

- 1 Claim 62 (original): The method of Claim 61, wherein the ramping step further
- 2 comprises:
 - 3 allowing to cool to a fourth temperature of about 100°F at a cooling ramp rate
 - 4 of about minus 210°F/hour.